In the Claims:

The following is a complete list of all pending claims:

1. (Previously presented) An emissions monitoring system for monitoring constituent concentration levels in an emission stream flowing through a combustion source exhaust stack, the system comprising:

a sampling device configured and positioned for extraction of sample gas from the emission stream in the stack;

a chamber positioned adjacent the stack, the chamber defining a chamber interior;

means for maintaining in the chamber interior a temperature above a dew point temperature of the sample gas;

at least one sample gas line in fluid communication with the sampling device, at least a portion of the at least one sample gas line being disposed in the chamber interior;

means for removing particulate matter from the sample gas, the means for removing particulate matter being disposed adjacent the stack and being in fluid communication with the at least one sample gas line;

an NO_2 converter disposed in the chamber interior in fluid communication with a first one of the at least one sample gas line downstream of the means for removing particulate matter, the NO_2 converter being operable at temperatures above the dew point temperature of the sample gas to convert NO_2 gas in the sample gas to NO gas;

means for removing water from the sample gas, the means for removing being disposed adjacent the chamber and being in fluid communication with the at least one sample gas line downstream of the chamber; and

at least one analyzer in fluid communication with the at least one sample gas line downstream of the means for removing water, each of the at least one analyzer

being configured for determination of a concentration level of a constituent in the sample gas.

2. (Previously presented) A system according to claim 1, wherein a first one of the at least one analyzer is configured for determination of an NO concentration level in the sample gas and is in fluid communication with the first one of the at least one sample gas line.

3. (Original) A system according to claim 2 wherein a second one of the at least one analyzer determines an O_2 concentration level in the sample gas and is in fluid communication with the first one of the at least one sample gas line.

4. (Original) A system according to claim 2 wherein a third one of the at least one analyzer determines a concentration level of a non-NO_x constituent of the sample gas and is in fluid communication with a second one of the at least one sample gas line.

5. (Original) A system according to claim 4 wherein the non-NO_x constituent is one of the group consisting of CO, CO_2 and SO_2.

6. (Original) A system according to claim 2 wherein the NO_2 converter includes a carbonaceous surface for reacting with NO_2 gas in the sample gas to convert the NO_2 gas to NO gas.

7. (Original) A system according to claim 6 wherein the carbonaceous surface comprises a combination of carbon and molybdenum.

8. (Original) A system according to claim 1 wherein the sampling device is a probe that includes means for cooling the sample gas.

9. (Original) A system according to claim 1 wherein the first analyzer is disposed in an environmentally controlled analysis room that is spaced apart from the chamber and wherein at least a portion of the at least one sample gas line is disposed intermediate the chamber and the analysis room and is disposed within a freeze-protected conduit.

10. (Original) A system according to claim 1 wherein the means for removing particulate matter is disposed in the chamber interior.

11. (Original) A system according to claim 1 further comprising a calibration and dynamic spiking arrangement including a first flow meter in fluid communication with a selected one of the at least one sample gas line, a first span gas source in selective communication with a first span gas line in fluid communication with a second flow rate meter and in selective communication with the selected one of the at least one sample gas line.

12. (Previously presented) An emissions monitoring system for monitoring constituent concentration levels in an emission stream flowing through a combustion source exhaust stack, the system comprising:

a sampling device configured and positioned for extraction of sample gas from the emission stream in the stack;

a chamber positioned adjacent the stack, the chamber defining a chamber interior;

means for maintaining in the chamber interior a temperature above a dew point temperature of the sample gas;

at least one sample gas line in fluid communication with the sampling device, at least a portion of the sample gas line being disposed in the chamber interior;

means for removing particulate matter from the sample gas, the means for removing particulate matter being disposed in the chamber interior and being in fluid communication with the at least one sample gas line;

an NO_2 converter in fluid communication with a first one of the at least one sample gas line downstream of the means for removing particulate matter, the NO_2 converter being operable at temperatures above the dew point temperature of the sample gas to convert NO_2 gas in the sample gas to NO gas and being disposed in the chamber interior;

means for removing water from the sample gas, the means for removing being disposed adjacent the chamber and being in fluid communication with the at least one sample gas line downstream of the NO_2 converter; and

a first analyzer in fluid communication with the first one of the at least one sample gas line downstream of the means for removing water, the first analyzer being configured for determination of an NO concentration level in the sample gas.

13. (Original) A system according to claim 12 further comprising a second analyzer in fluid communication with the first one of the at least one sample gas line, the second analyzer being configured for determination of an O_2 concentration level in the sample gas.

14. (Original) A system according to claim 12 further comprising a third analyzer in fluid communication with a second one of the at least one sample gas line, the second analyzer being configured for determination of a concentration level of a non-NO_x constituent of the sample gas.

15. (Original) A system according to claim 14 wherein the non-NO_x constituent is one of the group consisting of CO and SO_2.

16. (Original) A system according to claim 12 wherein the sampling device is a probe that includes means for cooling the sample gas.

17. (Original) A system according to claim 12 wherein the NO_2 converter includes a carbonaceous surface for reacting with NO_2 gas in the sample gas to convert the NO_2 gas to NO gas.

18. (Original) A system according to claim 17 wherein the carbonaceous surface comprises a combination of carbon and molybdenum.

19. (Original) A system according to claim 12 wherein the first analyzer is disposed in an environmentally controlled analysis room that is spaced apart from the chamber and wherein at

least a portion of the at least one sample gas line is disposed intermediate the chamber and the analysis room and is disposed within a freeze-protected conduit.

20. (Canceled)

21. (Original) A system according to claim 12 further comprising a calibration and dynamic spiking arrangement including a first flow meter in fluid communication with the first one of the at least one sample gas line, a first span gas source in selective communication with a first span gas line in fluid communication with a second flow rate meter and in selective communication with the first one of the at least one sample gas line.

22. (Previously presented) An emissions monitoring system for monitoring constituent concentration levels in an emission stream flowing through a combustion source exhaust stack, the system comprising:

a sampling device configured and positioned for extraction of sample gas from the emission stream in the stack;

a chamber positioned adjacent the stack, the chamber defining a chamber interior;

a chamber heater disposed in the chamber interior, the chamber heater being adapted for maintaining in the chamber interior a temperature above a dew point temperature of the sample gas;

at least one sample gas line in fluid communication with the sampling device, at least a portion of the sample gas line being disposed in the chamber interior;

a filter disposed adjacent the stack, the filter being in fluid communication with the at least one sample gas line so that the sample gas passes through the filter, which removes particulate matter from the sample gas to produce a filtered sample gas;

an NO_2 converter disposed in the chamber interior in fluid communication with a first one of the at least one sample gas line downstream of the filter, the NO_2 converter being operable at temperatures above the dew point temperature of the sample gas to convert NO_2 gas in the sample gas to NO gas;

a dryer disposed adjacent the chamber, the dryer being in fluid communication with the at least one sample gas line downstream of the NO_2 converter and having a dryer intake for receiving the filtered sample gas and a dryer exit for returning dried filtered sample gas to the at least one sample gas line, the dryer being configured for removing water from the filtered sample gas and for effectively lowering the dew point of the filtered sample gas; and

at least one analyzer in fluid communication with the at least one sample gas line downstream of the dryer, each of the at least one analyzer being configured for determination of a concentration level of a constituent in the dried filtered sample gas.

23. (Original) A system according to claim 22 wherein the dryer is disposed in the chamber interior.

24. (Original) A system according to claim 22 further comprising a conduit disposed intermediate the dryer exit and the at least one analyzer, at least a portion of the at least one sample gas line being disposed within the conduit for maintaining the dried filtered sample gas at a temperature above 32 °F.

25. (Previously presented) A method of monitoring a concentration level of NO_x in an exhaust stream from a combustion source, the method comprising the steps of:

capturing sample gas from the exhaust stream using a sample gas probe;

cooling the sample gas to a temperature below about 350 °F but above a dew point temperature of the sample gas;

converting NO_2 in the cooled sample gas to NO by passing the sample gas through a catalytic NO_2 converter adapted for operation at temperatures above the dew point temperature of the sample gas;

removing water from the sample gas by passing the gas through a dryer downstream of the NO_2 converter; and

determining a sample gas NO concentration level.

26. (Original) A method according to claim 25 wherein the step of converting NO_2 precedes the step of removing water from the sample gas.

27. (Original) A method according to claim 25 wherein the step of removing water from the sample gas includes cooling the sample gas to a temperature sufficient to cause the water in the sample gas to condense out of the sample gas.

28. (Canceled)

29. (Original) A method according to claim 25 further comprising the step of:
removing particulate matter from the sample gas.

30. (Original) A method according to claim 25 further comprising the steps of:
measuring a sample gas flow rate downstream of the dryer;
introducing a span gas having a known span gas NO_2 concentration level into the sample gas upstream of the NO_2 converter to form a combined sample and span gas flow;
measuring a combined sample and span gas flow rate downstream of the dryer;
determining a combined sample and span gas NO concentration level; and
determining an overall system bias using the known span gas NO_2 concentration level, the sample gas NO concentration level and the combined sample and span gas NO concentration level.

31. (Original) A method according to claim 30 further comprising the step of:
calculating a desired span gas flow rate using a desired combined sample and span gas NO concentration level, the sample gas flow rate and the span gas NO_2 concentration level.

32. (Previously presented) A method of monitoring a concentration level of NO_x in an exhaust stream from a combustion source, the method comprising the steps of:

capturing sample gas from the exhaust stream using a sample gas probe;

cooling the sample gas to a temperature below about 350 °F but above a dew point temperature of the sample gas;

removing particulate matter from the cooled sample gas;

converting NO_2 in the cooled sample gas to NO by passing the sample gas through a catalytic NO_2 converter while maintaining the temperature of the sample gas above the dew point temperature of the sample gas;

cooling the sample gas to a temperature sufficient to cause water in the sample gas to condense out of the sample gas; and

determining a sample gas NO concentration level;

wherein the step of converting NO_2 precedes the step of cooling the sample gas to a temperature sufficient to cause water in the sample gas to condense out of the sample gas.

33. (Previously presented) A method of monitoring a concentration level of a constituent in an exhaust stream from a combustion source, the method comprising:

capturing sample gas from the exhaust stream using a sample gas probe;

cooling the sample gas to a temperature below about 350 °F but above a dew point temperature of the sample gas;

removing particulate matter from the cooled sample gas;

converting NO_2 in the cooled sample gas to NO by passing the sample gas through a catalytic NO_2 converter adapted for operation at temperatures above the dew point temperature of the sample gas;

removing water from the sample gas by passing the sample gas through a dryer downstream of the NO_2 converter;

measuring a sample gas flow rate downstream of the dryer;

determining a sample gas constituent concentration level;

introducing a span gas having a known span gas constituent concentration level into the sample gas upstream of the catalytic NO_2 converter to form a combined sample and span gas flow;

measuring a combined sample and span gas flow rate downstream of the dryer;

determining a combined sample and span gas constituent concentration level; and

determining an overall system bias using the known span gas constituent concentration level, the sample gas constituent concentration level and the combined sample and span gas constituent concentration level.

34. (Original) A method according to claim 33 further comprising the step of:

calculating a desired span gas flow rate using a desired combined sample and span gas constituent concentration level, the sample gas flow rate and the span gas constituent concentration level.